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Transmission in birds and ferrets of Danish H5N8 HPAI viruses from the 2016/2017 epidemic

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An influenza A H5N8 highly pathogenic avian influenza (HPAI) virus epidemic occurred in 2016/2017. The epidemic comprised 29 European countries and is the largest recorded epidemic in Europe in terms of number of dead wild birds, poultry outbreaks and geographical dispersion.

In Denmark, the virus was detected in 82 dead wild birds from 7th November 2016 through 4th April 2017. In addition, one backyard holding and one captive bird holding were infected. Initially, detections of HPAI H5N8 viruses in wild birds were associated with mass-mortality events in tufted ducks in the south-east part of Denmark. The virus spread rapidly in wild waterbirds to larger areas, and during the final part of the epidemic, it was primarily found in birds of prey.

Molecular characterization of the viruses was conducted on HA gene sequences and full genome sequences from different time points throughout the epidemic.

The zoonotic potential of the first detected strain A/tufted duck/Denmark/11740-1wp1/2016 was tested in a ferret transmission study. The results showed that all three directly inoculated ferrets were infected and virus was detected in nasal washes up to 5 days post inoculation. Virus was not detected in nasal washes in neither of the three direct or three aerosol contacts at any of the days collected. All three inoculated ferrets seroconverted, and one of the three direct contact ferrets showed seroconversion when tested by both HAI and ELISA assays.